

CLAIMS

What is claimed is:

5 1. An integrated optical monitoring system, comprising:
 a hermetic package;
 an optical bench sealed within the package;
 a fiber pigtail entering the package via a fiber feed-through to connect to the bench
 and terminate above the bench;
 a tunable filter, connected to a top of the bench, that filters an optical signal
 supplied by the fiber pigtail; and
 a detector connected to the bench that detects the filtered optical signal from the
 tunable filter.

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15 2. An optical monitoring system as claimed in claim 1, further comprising an isolator
 for suppressing back reflections into the fiber pigtail.

20 3. An optical monitoring system as claimed in claim 1, further comprising an isolator
 installed on the optical bench for suppressing back reflections into the fiber pigtail.

25 4. An optical monitoring system as claimed in claim 1, further comprising a reference
 signal source that generates a reference signal that is filtered by the tunable filter.

5. An optical monitoring system as claimed in claim 1, further comprising a reference
signal source, installed on the optical bench, which generates a reference signal that is
filtered by the tunable filter.

6. An optical monitoring system as claimed in claim 5, wherein the reference signal
source comprises:
 a broadband source; and

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an etalon that generates a reference signal with stable spectral characteristics from
broadband signal from the broadband source.

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7. An optical monitoring system as claimed in claim 1, further comprising:
a reference signal source, installed on the optical bench, that generates a reference
signal that is filtered by the tunable filter; and
a reference signal detector that detects the reference signal which has been filtered
by the tunable filter.

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8. An optical monitoring system as claimed in claim 1, wherein the optical bench is
smaller than 0.75 inches by 0.5 inches.

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10 9. An optical monitoring system as claimed in claim 1, further comprising:
a reference signal source, installed on the optical bench, that generates the
reference signal;
a collimating lens, installed on the optical bench, for improving the collimation of
the reference signal;
a combining filter, installed on the optical bench, that inserts the reference signal
into a beam path of optical signal prior to filtering by the tunable filter;
a separation filter, installed on the optical bench, that separates the reference signal
from the optical signal, post filtering by the tunable filter; and
a reference signal detector, installed on the optical bench, that detects the reference
signal from the separation filter.

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20 10. A method for constructing an integrated optical monitoring system, comprising:
installing an optical bench in a hermetic package;
inserting a fiber pigtail through a fiber feed-through, into the package;
connecting an end of the fiber pigtail to the bench;
installing a tunable filter on a top of the bench to filter an optical signal from the
fiber pigtail; and

installing a detector on the bench to detect the filtered optical signal from the tunable filter.

11. A method as claimed in claim 10, further comprising installing an isolator on the bench to suppress back reflections into the fiber pigtail.

5 12. A method as claimed in claim 11, further comprising:
generating a reference signal; and
filtering the reference signal with the tunable filter.

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10 13. A method as claimed in claim 10, further comprising:
installing a reference signal source on the optical bench; and
installing a combining filter on the optical bench to insert a reference signal from
the reference source into a beam path of the optical signal.

14. A method as claimed in claim 13, wherein the step of installing the reference signal source comprises:
installing a broadband source; and
installing etalon that converts emissions from the broadband source into a reference signal with stable spectral characteristics.

15. A method as claimed in claim 10, wherein the optical bench is smaller than 0.75 inches by 0.5 inches.

20 16. A method as claimed in claim 10, further comprising:
installing a reference signal source on the optical bench;
installing a collimating lens on the optical bench for improving collimation of the reference signal;
installing a combining filter on the optical bench that inserts the reference signal into a beam path of the optical signal prior to filtering by the tunable filter; and

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installing a separation filter on the optical bench that separates the reference signal from the optical signal post filtering by the tunable filter.

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